

# (12) United States Patent

### Komatsu et al.

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### (54) NONAQUEOUS SECONDARY **ELECTROLYTIC BATTERY**

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### **ABSTRACT**

A nonaqueous secondary electrolytic battery comprising an electricity-generating element formed by spirally winding a laminate of a positive electrode plate, a separating material and a negative electrode plate, and an electrolytic solution with which the separating material, if it is a separator, is impregnated. The electricity-generating element is sealed in a battery case formed by a resin-laminated sheet comprising a metal layer as a barrier layer. Only a pair of lead terminals are drawn to the exterior of the battery case. The resin sheet comprises an oriented resin layer laminated on both surfaces of the metal layer. The inner heat-fused layers are opposed and heat-fused to each other. A molten and solidified resin mass is formed protruding from the inner end of the welded portion toward the inner space of the battery by 0.1 mm or more. Alternatively, the welded portion is formed thinner at the outer end thereof than at the inner end thereof.

## 9 Claims, 19 Drawing Sheets

